

REMARKS

Claims 1-10 are pending in the above application.

The Office Action dated November 19, 2007, has been received and carefully reviewed. Each issue raised in that Office Action is addressed below, and reconsideration and allowance of claims 1-10 is respectfully requested in view of the following remarks.

Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Hatano. Claim 1, as amended, recites at least one controller for supplying a first gas to the process chamber through a first supply tube between the at least one controller and the process chamber and alternately for supplying a second gas to the process chamber through a second supply tube between the at least one controller and the process chamber independent of the first tube. It was believed that one skilled in the art would have understood that a controller supplying a gas to a process chamber through a supply tube would have understood that the supply tube was between the controller and the process chamber and would not have reasonably interpreted the claim as broadly as has been done in the Office Action. However, in order to advance prosecution, by the above amendment, claim 1 has been revised to recite that the first and second supply tubes are between at least one controller and the process chamber. Hatano does not show or suggest the invention now defined by claim 1, and claim 1 is submitted to be allowable over Hatano for at least this reason.

Claims 2, 3 and 5-8 depend from claim 1 and are submitted to be allowable for at least the same reasons as claim 1.

Claim 9 is rejected under 35 U.S.C. 102(b) as being anticipated by Hatano. By the above amendment, claim 9 has been revised to recite supply tubes between a controller and a process chamber. This arrangement is not shown or suggested by Hatano, and claim 9 is therefore submitted to be allowable for at least the same reasons as claim 1.

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hatano in view of Miyazaki. First, the Examiner states in the Office Action that "757 teaches some limitations of claim 4: A substrate processing apparatus having a processing chamber which accommodates substrates therein, ... in which at least two gases which react with each other ... are alternately supplied into said processing chamber to form a film or films

(abstract) on a surface or surfaces of said substrates ...". It is submitted that this characterization by the Office Action is in error. In Hatano, the process gas source 208 and the cleaning gas sources 209a-209d are connected to the valve V''. See column 15, lines 36 – 51. Therefore, during the formation of a film on a substrate, only the process gas source 208 is used to supply pre-mixed gases for film forming (column 15, lines 37-42). Clearly, in Hatano, and contrary to what has been stated in the Office Action, film forming gases are not alternately supplied during film forming on the substrate.

Second, as acknowledged in the Office Action regarding claim 4, Hatano does not show or suggest gas supply tubes connected to a gas supply member inside a process chamber. The Office Action cites Miyazaki to show a process chamber that has two tubes and indicates that it would have been obvious to combine Miyazaki and Hatano "by connecting both gas supply tubes inside the reaction chamber." Because it is necessary for the connecting point (Valve V'') in Hatano to switch between the film-forming process gases and the cleaning gases for the respective film-forming and etching processes, a person of ordinary skill in the art would not dispose the connecting point (Valve V'') in a high temperature reaction chamber. In addition, the Office Action alleges that "At the time the invention was made, it would have been obvious ... by connecting both gas supply tubes and the gas supply member inside the reaction chamber ... for the purpose of improving the gas uniformity." However, it is submitted that improving gas uniformity and disposing the gas changing point (Valve V'') in the reaction chamber are totally different, and don't even appear related, and therefore the motivation alleged appears unreasonable.

And finally with respect to claim 4, the examiner's comments in the "Response to Arguments" section of the Office Action have also been reviewed. However, it is respectfully submitted that the Office Action still has not satisfied the requirements of MPEP 706.02(j) because it is not clear 1) what the modified Hatano device would look like and 2) why one skilled in the art would make such a change. The proposed modification appears to be replacing the single line between Hatano's MFC 222 and the process chamber with a two-pipe structure such as shown in Figure 1 of Miyazaki. However, in Hatano, any mixing of gasses occurs upstream of the MFC 222. Using Miyazaki's two-tube structure in

Hatano would therefore not provide any advantage as regards the mixing of gases, and it is maintained that one skilled in the art would have no reason to make such a change absent the teachings of the present disclosure. Because a reason for making the proposed modification to Hatano has not been provided, it is respectfully submitted that a prima facie case of obviousness has not been presented in connection with claim 4 and that claim 4 is allowable over the art of record.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hatano in view of Raaijmakers. By the above amendment, claim 10 has been revised to recite a method using a structure that includes two supply tubes extending into a process chamber. This amendment structurally distinguishes over Hatano alone or in combination with Miyazaki as discussed above in connection with claim 4. Raaijmakers appears to be cited to show that ALD processes are known. Applicant does not dispute this fact. However, claim 10 recites a method (that may be used for carrying out ALD, for example) that uses a particular structure. Claim 10 recites steps of supplying a first one of two gases to a single gas supply member through a first one of two supply tubes for a first period of time to form a film on said substrate or substrates, and after said first period of time, supplying a second one of the two gases to the single gas supply member through a second one of the two supply tubes for a second period of time to form a film on said substrate or substrates. The fact that prior ALD devices supply two gases at two separate times in no manner suggests to one of ordinary skill in the art that Hatano should be structurally modified to provide first and second supply tubes and then operated in the manner recited in claim 10. The Office Action states “At the time the invention was made, it would have been obvious ... to have combined ‘387 with ‘757, by applying the process taught by ‘387 in the apparatus provided by ‘757 to execute the processing sequence.” However, in Hatano (“757), there is only one process gas source 208, and therefore it is submitted that it would be impossible to apply the alternating deposition (ALD) process taught by ‘387 in the apparatus provided by ‘757 because of the sole process gas source 208 in Hatano. The method recited in claim 10 is not shown or suggested by the art of record, and claim 10 is submitted to be allowable for at least this reason.

CONCLUSION

Each issue raised in the Office Action dated November 19, 2007, has been addressed, and it is believed that claim 1-10 are in condition for allowance. Wherefore, reconsideration and allowance of claims 1-10 is earnestly solicited.

Should there be any outstanding matters that need to be resolved in the present application, the examiner is respectfully requested to contact the undersigned to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.14; particularly, extension of time fees.

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Respectfully submitted,

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